CALFED BAY-DELTA PROGRAM

Office Memorandum

Date: January 2, 1996

To: Victor Pacheco

From: Michael Norris

Subject: Summary memo on assumptions that were made for future agricultural water conservation measures as they applied to 1994 publication of Bulletin 160

As per your instructions, I have conducted further investigations into what assumptions were made for future agricultural water conservation efforts as projected in DWR Bulletin 160. This work is a follow-up to my prior memo dated November 14, 1995. As you instructed, I have not done any further research into the projected urban water usage as you feel that chapter of Bulletin 160 is fairly straightforward.

Again, I contacted Ed Craddock from DWR as he was one of the principal contributors of Chapter 7 dealing with agricultural water conservation estimates in Bulletin 160-93. Craddock said most of the assumptions for the projected agricultural water usage were based upon the findings of the State Water Resources Control Board (SWRCB) Bay-Delta Agricultural Sub-Workgroup #1 for the Bay-Delta Proceedings. DWR staff in the sub-workgroup included Craddock and Maurice Roos. The sub-workgroup met in 1989 and 1990 and prepared a detailed 170-page report in 1992. The report was presented to Dave Beringer, the Program Manager at that time for the Bay-Delta Unit at the SWRCB, on April 1, 1992. I borrowed a copy of the report from Maurice Roos.

The report discusses a Seasonal Application Efficiency (SAE) of 73 percent as an appropriate target level for on-farm irrigation efficiency for the San Joaquin Valley. In addition, an average distribution uniformity (DU) of 80 percent is related to the 73 percent SAE. These values are the same as the ones that are discussed in Bulletin 160 on page 177 of Volume 1. Craddock reports that the work of agricultural sub-workgroup #1 was used to project agricultural water savings for the entire state and this is summarized on page 177 of Volume 1 of Bulletin 160.

I also contacted Charlie Kratzer from the US Geological Survey Water Resources Division in Sacramento. Charlie used to work with the Bay-Delta unit at the SWRCB and was closely involved with the sub-workgroups for the Bay-Delta Proceedings. Charlie reports that there was agreement early on about the 73 percent SAE and 80 percent DU values. However, there was disagreement about the database that was used to estimate the water savings in the westside San Joaquin Basin in Detailed Analysis Unit (DAU) number 216. Charlie says that agricultural water use in that DAU was estimated based on data from the Bakersfield area. Other studies suggested an alternate data set was more appropriate. Charlie says the database that was used for the

estimates made by sub-workgroup #1 resulted in an existing SAE of 71 percent. Therefore, not much water is saved when the target level of 73 percent is achieved. However, using a smaller value for the existing SAE can result in significant water savings down the road in achieving the 73 percent target level. The sub-workgroup was aware of the Montgomery Engineering ground and surface water model that was developed for DWR, SWRCB, the Bureau of Reclamation (USBR), and the Contra Costa Water District (CCWD) but elected not to use it because they felt that it was not useful at it's present level of development. Alternatively, the sub-workgroup recommended continued monitoring of the model to look for refinements in it. It appears Kratzer was not in concurrence with this item so the decision not to go with the Montgomery model was one of majority rule of the sub-workgroup and not total concurrence. In spite of the arguably different amounts of water that might be saved by using a different SAE value, Bulletin 160 concludes this amount of water is small compared to the total amount of applied agricultural water. It should also be noted that the agricultural sub-workgroup was presented with several different data sets (none of them good for the Northern San Joaquin Valley) and/or models and had to make some sort of decision about what to use for it's findings. The agricultural applied water savings that occur in the year 2020 (estimated at 113,000 acre-feet) in Bulletin 160 result from the assumed implementation of the "source control element" of the San Joaquin Valley Drainage Program, a report that was published in September of 1990. Additional savings would appear to be possible if the SAE value is adjusted downward for 1990 baseline comparisons.

Many of the issues that the CALFED Bay Delta Program are discussing now appear to have been discussed in the past by various sub-workgroups of the Bay-Delta Proceedings in 1990. A memo from Charlie Kratzer dated 4-11-90 indicates there were eight "workgroups" and "subgroups" as follows:

1. Operational Studies Workgroup
    - Water Year Classification subgroup
    - Hydrodynamics and Salinity (S. Delta and Suisun Marsh) subgroup
2. Urban Water Demand and Supply Workgroup
    - Urban Demand and Supply subgroup
    - Water Conservation subgroup
    - Waste Water Reclamation subgroup
3. Agricultural Conservation Workgroup
    - Unit Water Use and Irrigation Efficiency subgroup
    - Crop Use of Perched Water subgroup
    - DAU 216 Salt Sink Area subgroup
    - Economics and Other Impacts subgroup
    - Impacts on Conservation subgroup
    - Conjunctive Use subgroup
4. Delta M&I Workgroup
5. Delta Agriculture Workgroup
6. Public Trust Workgroup
7. SWP Conjunctive Use Workgroup
8. Economics Workgroup

Greg Gartrell, Ed Winkler, and Pete Chadwick were the contacts for the Delta M&I, Delta

Agriculture, and Public Trust Workgroups, respectively. Rich Satkowski from the SWRCB reports that all of the workgroups published some form of a report so that information should be available at the SWRCB. Within workgroups, not all of the subgroups may have published reports. Roos and Kratzer recalled that some of the conservation "sub-workgroups" combined, fell by the wayside, or were formed on paper and never actually met. One group that was looking at groundwater in the Tulare area reportedly disbanded after it found out that a consulting firm was doing the same thing on behalf of the district. Roos and Kratzer recall that some "draft" reports or some sort of draft material may have been prepared by some of the groups.

As I understand it, the purpose of this memo is to try and decide whether it is best to adopt Bulletin 160 in its present form for agricultural water projections or use something different. The 170-page (back to back) report by the Bay-Delta Agricultural Sub-Workgroup #1 indicates that a lot of work was done over a two-year period before that report was published. The Table of Contents on page 39 lists minutes from 17 meetings that were conducted. If, after all that work, the sub-workgroup could not come to a definitive conclusion on estimated agricultural water savings, then it is unlikely that the CALFED Bay Delta Program, BDAC, and all the public that will be reviewing our reports can uniformly come to a definitive answer either. It is probably best to adopt Bulletin 160 in its present form for agricultural water savings projections because it is a recognized report and other agencies use it too for baseline and future projections. Alternatively, we can elect to adopt Bulletin 160 in its present form and let other people comment on their own time and expense regarding what standards we should be using rather than the CALFED Bay Delta Program spending the kind of time that the Bay-Delta Agricultural Sub-Workgroup #1 did doing the same thing.

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